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EXAMINER

BERNATZ, KEVIN M

ART UNIT PAPER NUMBER

1773

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Please find below and/or attached an Office communication concerning this application or proceeding.

ML2

# Office Action Summary

Application No.

10/628,011

Applicant(s)

TANG, KAI

Examiner

Kevin M Bernatz

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-24 is/are allowed.
- 6) ☒ Claim(s) 1-18 and 25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/14/03.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings filed July 24, 2003 are acceptable.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1 – 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Honda et al. (U.S. Patent No. 5,851,643).

Regarding claim 1, Honda et al. disclose a thin film magnetic recording medium for use with a magnetic recording head (*Title*) comprising an upper ferromagnetic layer (*Figure 5a, layer 25*) having a first magnetic anisotropy and being nearest to the surface of the thin film magnetic recording medium, a lower ferromagnetic layer (*element 23*) having a second magnetic anisotropy which is lower than the first magnetic anisotropy

(col. 19, line 26 bridging col. 20, line 4), and a nonmagnetic spacer layer separating the upper and lower ferromagnetic layers (*element 24*).

The limitation(s) “by an amount selected to compensate for a lower magnetic field from the magnetic recording head due to a larger distance between the magnetic recording head and the lower ferromagnetic layer” is (an) intended use limitation(s) since it is directed to the intended use of lower ferromagnetic layer. Note that “in apparatus, article, and composition claims, intended use must result in a **structural difference** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim.*** In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art.” [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02. In the instant case, the claimed intended use limitation merely requires that the lower ferromagnetic layer possess a magnetic anisotropy value lower than the upper ferromagnetic layer by an unclaimed magnitude. Given that the prior art provides explicit teaching of the same relative property limitation (i.e. controlling the upper ferromagnetic layer to possess a higher magnetic anisotropy), the *reason* behind controlling the property is not germane to the determination of patentability of a *product claim*.

Regarding claim 2, the claimed limitation “wherein the upper ... are approximately equal” is an apparatus limitation related to the use of the claimed *product*

in combination with a magnetic recording head capable of generating a first and second write current. In so far as the above limitation applies to the *structure of the claimed product*, the Examiner notes that both layers must be capable of meeting the claimed apparatus limitation. Given that both layers in Honda et al. are magnetic layers, the Examiner deems that the disclosed layers would be *capable of meeting* the claimed apparatus limitation should they be subject to a magnetic recording head capable of generating a first and second write current.

Regarding claim 3, the claimed limitation “wherein normalized DC erase noise plotted versus a write current in the magnetic recording head has a single peak” is an apparatus limitation and is not further limiting in so far as the structure of the *product* is concerned. Specifically, applicant is claiming a magnetic recording medium and not a magnetic recording apparatus comprising the medium and the magnetic head capable of generating a write current. Given the substantial similarity in structure between the claimed and disclosed *products*, the Examiner deems that the disclosed Honda et al. invention would *be capable of meeting* the claimed apparatus limitation.

Regarding claims 4 and 6, Honda et al. disclose embodiments meeting applicants' claimed limitations (*col. 17, lines 45 – 48 and col. 20, line 5 bridging col. 21, line 67*).

4. Claims 1 – 3 are rejected under 35 U.S.C. 102(a) and/or 102(e) as being anticipated by Coffey et al. (U.S. Patent App. No. 2002/0192506 A1).

Regarding claim 1, Coffey et al. disclose a thin film magnetic recording medium for use with a magnetic recording head (*Title*) comprising an upper ferromagnetic layer (*Figure 4a, layer 404*) having a first magnetic anisotropy and being nearest to the surface of the thin film magnetic recording medium, a lower ferromagnetic layer (*element 402*) having a second magnetic anisotropy which is lower than the first magnetic anisotropy (*Paragraph 0061*), and a nonmagnetic spacer layer separating the upper and lower ferromagnetic layers (*Paragraph 0058*).

The limitation(s) “by an amount selected to compensate for a lower magnetic field from the magnetic recording head due to a larger distance between the magnetic recording head and the lower ferromagnetic layer” is (an) intended use limitation(s) since it is directed to the intended use of lower ferromagnetic layer. Note that “in apparatus, article, and composition claims, intended use must result in a **structural difference** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. **If the prior art structure is capable of performing the intended use, then it meets the claim.** In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art.” [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02. In the instant case, the claimed intended use limitation merely requires that the lower ferromagnetic layer possess a magnetic anisotropy value lower

than the upper ferromagnetic layer by an unclaimed magnitude. Given that the prior art provides explicit teaching of the same relative property limitation (i.e. controlling the upper ferromagnetic layer to possess a higher magnetic anisotropy), the *reason* behind controlling the property is not germane to the determination of patentability of a *product claim*.

Regarding claim 2, the claimed limitation "wherein the upper ... are approximately equal" is an apparatus limitation related to the use of the claimed *product* in combination with a magnetic recording head capable of generating a first and second write current. In so far as the above limitation applies to the *structure of the claimed product*, the Examiner notes that both layers must be capable of meeting the claimed apparatus limitation. Given that both layers in Coffey et al. are magnetic layers, the Examiner deems that the disclosed layers would be *capable of meeting* the claimed apparatus limitation should they be subject to a magnetic recording head capable of generating a first and second write current.

Regarding claim 3, the claimed limitation "wherein normalized DC erase noise plotted versus a write current in the magnetic recording head has a single peak" is an apparatus limitation and is not further limiting in so far as the structure of the *product* is concerned. Specifically, applicant is claiming a magnetic recording medium and not a magnetic recording apparatus comprising the medium and the magnetic head capable of generating a write current. Given the substantial similarity in structure between the claimed and disclosed *products*, the Examiner deems that the disclosed Coffey et al. invention would *be capable of meeting* the claimed apparatus limitation.

5. Claims 1 – 3, 7 – 9, 13 – 15 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Girt et al. (U.S. Patent No. 6,777,112 B1).

Regarding claim 1, Girt et al. disclose a thin film magnetic recording medium for use with a magnetic recording head (*Title*) comprising an upper ferromagnetic layer (*Figure 4, layer 13C*) having a first magnetic anisotropy and being nearest to the surface of the thin film magnetic recording medium, a lower ferromagnetic layer (*element 13D*) having a second magnetic anisotropy which is lower than the first magnetic anisotropy (*col. 7, lines 36 – 64 wherein 13D is disclosed to have a magnetic anisotropy of greater than  $10^6$  erg/cc and 13C is disclosed to have a magnetic anisotropy of greater than  $10^7$  erg/cc*), and a nonmagnetic spacer layer separating the upper and lower ferromagnetic layers (*element 13S*). While Girt et al. does not explicitly state that the 13C layer possesses a higher magnetic anisotropy than the 13D layer, the Examiner deems that Girt et al. provides sufficient guidance that one of ordinary skill in the art would readily recognize that the continuous magnetic layers (13C) preferably would possess a higher magnetic anisotropy (i.e. greater than  $10^7$  erg/cc) than the discontinuous layers (i.e. only greater than  $10^6$  erg/cc).

The limitation(s) “by an amount selected to compensate for a lower magnetic field from the magnetic recording head due to a larger distance between the magnetic recording head and the lower ferromagnetic layer” is (an) intended use limitation(s) since it is directed to the intended use of lower ferromagnetic layer. Note that “in apparatus, article, and composition claims, intended use must result in a **structural**



**difference** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim.*** In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02. In the instant case, the claimed intended use limitation merely requires that the lower ferromagnetic layer possess a magnetic anisotropy value lower than the upper ferromagnetic layer by an unclaimed magnitude. Given that the prior art provides explicit teaching of the same relative property limitation (i.e. controlling the upper ferromagnetic layer to possess a higher magnetic anisotropy), the *reason* behind controlling the property is not germane to the determination of patentability of a *product claim*.

Regarding claim 2, the claimed limitation "wherein the upper ... are approximately equal" is an apparatus limitation related to the use of the claimed *product* in combination with a magnetic recording head capable of generating a first and second write current. In so far as the above limitation applies to the *structure of the claimed product*, the Examiner notes that both layers must be capable of meeting the claimed apparatus limitation. Given that both layers in Girt et al. are magnetic layers, the Examiner deems that the disclosed layers would be *capable of meeting* the claimed apparatus limitation should they be subject to a magnetic recording head capable of generating a first and second write current.

Regarding claim 3, the claimed limitation “wherein normalized DC erase noise plotted versus a write current in the magnetic recording head has a single peak” is an apparatus limitation and is not further limiting in so far as the structure of the *product* is concerned. Specifically, applicant is claiming a magnetic recording medium and not a magnetic recording apparatus comprising the medium and the magnetic head capable of generating a write current. Given the substantial similarity in structure between the claimed and disclosed *products*, the Examiner deems that the disclosed Girt et al. invention would *be capable of meeting* the claimed apparatus limitation.

Regarding claims 7 – 9 and 13 - 15, Girt et al. teach an antiferromagnetically coupled structure meeting applicants’ claimed structural limitations (*Figure 4, layers 13S’ and 13D’ and col. 7, line 65 bridging col. 8, line 49*). The Examiner notes that the upper continuous magnetic layer (13C) would preferably possess the highest magnetic anisotropy given that the two lower layers (13D and 13D’) are both made out of the lower magnetic anisotropy discontinuous material.

Regarding claim 25, Girt et al. teach a method of forming a thin film recording medium including an underlayer (*element 12*).

6. Claims 1 – 3, 7 – 9, 13 – 15 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al. (U.S. Patent App. No.2003/0232218 A1).

Regarding claim 1, Sato et al. disclose a thin film magnetic recording medium for use with a magnetic recording head (*Title*) comprising an upper ferromagnetic layer (*Figure 2, layer 9*) having a first magnetic anisotropy and being nearest to the surface of

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the thin film magnetic recording medium, a lower ferromagnetic layer (*element 7*) having a second magnetic anisotropy which is lower than the first magnetic anisotropy (*Paragraph 0051*), and a nonmagnetic spacer layer separating the upper and lower ferromagnetic layers (*element 8*).

The limitation(s) "by an amount selected to compensate for a lower magnetic field from the magnetic recording head due to a larger distance between the magnetic recording head and the lower ferromagnetic layer" is (an) intended use limitation(s) since it is directed to the intended use of lower ferromagnetic layer. Note that "in apparatus, article, and composition claims, intended use must result in a **structural difference** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. ***If the prior art structure is capable of performing the intended use, then it meets the claim.*** In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02. In the instant case, the claimed intended use limitation merely requires that the lower ferromagnetic layer possess a magnetic anisotropy value lower than the upper ferromagnetic layer by an unclaimed magnitude. Given that the prior art provides explicit teaching of the same relative property limitation (i.e. controlling the upper ferromagnetic layer to possess a higher magnetic anisotropy), the *reason* behind controlling the property is not germane to the determination of patentability of a *product claim*.

Regarding claim 2, the claimed limitation “wherein the upper ... are approximately equal” is an apparatus limitation related to the use of the claimed *product* in combination with a magnetic recording head capable of generating a first and second write current. In so far as the above limitation applies to the *structure of the claimed product*, the Examiner notes that both layers must be capable of meeting the claimed apparatus limitation. Given that both layers in Sato et al. are magnetic layers, the Examiner deems that the disclosed layers would be *capable of meeting* the claimed apparatus limitation should they be subject to a magnetic recording head capable of generating a first and second write current.

Regarding claim 3, the claimed limitation “wherein normalized DC erase noise plotted versus a write current in the magnetic recording head has a single peak” is an apparatus limitation and is not further limiting in so far as the structure of the *product* is concerned. Specifically, applicant is claiming a magnetic recording medium and not a magnetic recording apparatus comprising the medium and the magnetic head capable of generating a write current. Given the substantial similarity in structure between the claimed and disclosed *products*, the Examiner deems that the disclosed Sato et al. invention would *be capable of meeting* the claimed apparatus limitation.

Regarding claims 7 – 9 and 13 - 15, Sato et al. teach an antiferromagnetically coupled structure meeting applicants’ claimed structural limitations (*Figure 2, layers 8-1 and 7-1 and Paragraphs 0043 and 0049*). The Examiner notes that the upper magnetic layer (*element 9*) is explicitly taught to possess a magnetic anisotropy greater than

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ferromagnetic layer 7, which Sato et al. teach can possess a magnetic anisotropy ( $K_u$ ) greater than ferromagnetic layer 7-1 (*Paragraph 51*). I.e.  $K_{u_{layer\ 9}} > K_{u_{layer\ 7}} > K_{u_{layer\ 7-1}}$ .

Regarding claim 25, Sato et al. teach a method of forming a thin film recording medium including an underlayer (*elements 2 - 6*).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al. as applied above, and further in view of Takahashi et al. (U.S. Patent App. No. 2003/0099866 A1).

Honda et al. is relied upon as described above.

While Honda et al. disclose CoCrPt alloys (*col. 17, lines 45 – 48*), as well as the known addition of B to the above alloys (*col. 17, lines 48 – 53*), Honda et al. fail to explicitly disclose using a CoCrPtB alloy for each layer wherein the lower ferromagnetic layer has a lower atomic percent of platinum than the upper ferromagnetic layer.

However, Takahashi et al. teach that CoCrPtB is a preferred CoCrPt alloy and that the greater the amount of platinum, the more enhanced the magnetic anisotropy of the alloy (*Paragraph 0045*). Given that Honda et al. explicitly teach the upper magnetic layer should possess a higher anisotropy, the Examiner deems that one of ordinary skill

would naturally recognize that controlling the platinum amount to meet applicant's claimed limitation could be used to obtain the disclosed relative property limitation.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Honda et al. to use the preferred CoCrPtB alloys possessing a relative Pt concentration meeting applicant's claimed limitations as taught by Takahashi et al., since controlling the Pt concentration to meet the claimed relative limitations would allow the magnetic anisotropy of the alloy to be controlled as Honda et al. requires.

9. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coffey et al. as applied above, and further in view of Takahashi et al. ('866 A1).

Coffey et al. is relied upon as described above. Coffey et al. further teach that instead of Co/Pt superlattice structures, CoCrPt alloys can be used as the magnetic layers instead (*Paragraph 0060*).

While Coffey et al. disclose CoCrPtB alloys, Coffey et al. fail to explicitly disclose using a CoCrPtB alloy for each layer wherein the lower ferromagnetic layer has a lower atomic percent of platinum than the upper ferromagnetic layer.

However, Takahashi et al. teach that CoCrPtB is a preferred CoCrPt alloy and that the greater the amount of platinum, the more enhanced the magnetic anisotropy of the alloy (*Paragraph 0045*). Given that Coffey et al. explicitly teach the upper magnetic layer should possess a higher anisotropy, the Examiner deems that one of ordinary skill

would naturally recognize that controlling the platinum amount to meet applicant's claimed limitation could be used to obtain the disclosed relative property limitation.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Coffey et al. to use the preferred CoCrPtB alloys possessing a relative Pt concentration meeting applicant's claimed limitations as taught by Takahashi et al., since controlling the Pt concentration to meet the claimed relative limitations would allow the magnetic anisotropy of the alloy to be controlled as Coffey et al. requires.

10. Claims 4, 5, 10, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girt et al. as applied above, and further in view of Takahashi et al. ('866 A1).

Girt et al. is relied upon as described above. Girt et al. further teach that CoCrPtB alloys can be used as the magnetic layers (*col. 9, line 63 bridging col. 10, line 13*).

While Girt et al. disclose CoCrPtB alloys, Girt et al. fail to explicitly disclose using a CoCrPtB alloy for each layer wherein the lower ferromagnetic layer has a lower atomic percent of platinum than the upper ferromagnetic layer.

However, Takahashi et al. teach that CoCrPtB is a preferred CoCrPt alloy and that the greater the amount of platinum, the more enhanced the magnetic anisotropy of the alloy (*Paragraph 0045*). Given that Girt et al. implicitly teach the upper magnetic layer should possess a higher anisotropy, the Examiner deems that one of ordinary skill

would naturally recognize that controlling the platinum amount to meet applicant's claimed limitation could be used to obtain the disclosed relative property limitation.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Girt et al. to use the preferred CoCrPtB alloys possessing a relative Pt concentration meeting applicant's claimed limitations as taught by Takahashi et al., since controlling the Pt concentration to meet the claimed relative limitations would allow the magnetic anisotropy of the alloy to be controlled as Girt et al. requires.

11. Claims 4, 5, 10, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. as applied above, and further in view of Takahashi et al. ('866 A1).

Sato et al. is relied upon as described above.

While Sato et al. disclose CoCrPtB alloys (*Paragraphs 0044 and 0062*), Sato et al. fail to explicitly disclose using a CoCrPtB alloy for each layer wherein the lower ferromagnetic layer has a lower atomic percent of platinum than the upper ferromagnetic layer.

However, Takahashi et al. teach that CoCrPtB is a preferred CoCrPt alloy and that the greater the amount of platinum, the more enhanced the magnetic anisotropy of the alloy (*Paragraph 0045*). Given that Sato et al. explicitly teach the upper magnetic layer should possess a higher anisotropy, the Examiner deems that one of ordinary skill



would naturally recognize that controlling the platinum amount to meet applicant's claimed limitation could be used to obtain the disclosed relative property limitation.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Sato et al. to use the preferred CoCrPtB alloys possessing a relative Pt concentration meeting applicant's claimed limitations as taught by Takahashi et al., since controlling the Pt concentration to meet the claimed relative limitations would allow the magnetic anisotropy of the alloy to be controlled as Sato et al. requires.

#### ***Allowable Subject Matter***


12. The following is a statement of reasons for the indication of allowable subject matter: regarding claims 19 – 24, the prior art of record fails to teach or render obvious a structure comprising a first and second antiferromagnetically coupled (AFC) magnetic layer structure wherein the first AFC master ferromagnetic layer in said first AFC structure possesses a magnetic anisotropy greater in magnitude than the magnetic anisotropy of the second AFC master ferromagnetic layer in said second AFC structure.

#### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kevin M. Bernatz, PhD.  
Primary Examiner

November 8, 2004